

Serial No. 10/666,174  
Amendment and Response to  
Final Office Action Mailed November 28, 2007

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AMENDMENTS TO THE CLAIMS

The following listing of claims is provided in accordance with 37 C.F.R. § 1.121.

JAN 28 2008

1. (Previously presented) An apparatus for acknowledging a data transfer, comprising:
  - a processor configured to transfer data according to a plurality of protocols of a protocol stack comprising:
    - a first protocol for initiating a request for a data transfer; and
    - a second protocol for:
      - receiving the request for the data transfer from the first protocol;
      - determining whether the request for the data transfer contains a request for acknowledgement of completion of the data transfer;
      - sending a performance request corresponding to the request for data transfer to a third protocol; and
      - if the request for data transfer does contain a request for acknowledgement of the completion of the data transfer, setting a variable in memory to wait for an event to correspond to the completion of the request for data transfer and sending an acknowledgement to the first protocol upon the occurrence of the event.
2. (Original) The apparatus set forth in claim 1, wherein the first protocol is an internet small computer systems interface ("iSCSI") protocol.
3. (Original) The apparatus set forth in claim 1, wherein the second protocol is an internet small computer systems interface extensions for remote direct memory access ("iSER") protocol.
4. (Original) The apparatus set forth in claim 1, wherein the request for the data transfer comprises an attribute that indicates the request for acknowledgement of completion of the data transfer.

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5. (Original) The apparatus set forth in claim 4, wherein a value of an error recovery level is notified to the second protocol from the first protocol.
6. (Original) The apparatus set forth in claim 1, wherein the third protocol is a remote direct memory access ("RDMA") protocol.
7. (Original) The apparatus set forth in claim 1, wherein the event relates to a zero length remote direct memory access ("RDMA") read completion.
8. (Previously presented) A network, comprising:
  - a plurality of systems, at least one of the plurality of systems comprising a protocol stack and a process;
  - at least one input/output device;
  - a network that connects the plurality of systems and the at least one input/output device for communication; and
  - wherein the protocol stack comprises:
    - a first protocol layer for interacting with a consumer;
    - a second protocol layer for:
      - receiving a data exchange request from the first protocol layer;
      - examining the data exchange request to determine if an acknowledgement request is indicated;
      - sending a performance request corresponding to the data exchange request to a third protocol layer; and
      - if the data exchange request contains the acknowledgement request, setting a variable in memory to wait for an event that corresponds to the completion of the performance request and sending an acknowledgement to the first protocol layer upon the occurrence of the event.
9. (Previously presented) The network set forth in claim 8, wherein the third protocol layer interacts with the second protocol layer and the third layer is for:

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receiving the performance request that corresponds to the data exchange request; and

transmitting a message to one of the at least one of the plurality of systems and the at least one input/output device via the network.

10. (Original) The network set forth in claim 9, comprising a remote direct memory access network interface card ("RNIC") that is used by the protocol stack to exchange the message between the at least one of the plurality of systems and the at least one input/output device via the network.

11. (Original) The network set forth in claim 9, wherein the message is a remote direct memory access ("RDMA") write message.

12. (Original) The network set forth in claim 9, wherein the message is a zero length remote direct memory access ("RDMA") read message.

13. (Original) The network set forth in claim 8, wherein the second protocol layer is an internet small computer systems interface extensions for remote direct memory access ("iSER") protocol.

14. (Original) The network set forth in claim 8, wherein the data exchange request comprises an attribute and data.

15. (Previously presented) The network set forth in claim 8, wherein the process operates according to a small computer systems interface protocol ("SCSI").

16. (Previously presented) A method of acknowledging a data transfer, the method comprising:

transferring data according to a plurality of protocols;

receiving a request for a data transfer according to a first protocol;

determining whether the request for the data transfer contains a request for

acknowledgement of completion of the data transfer;

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sending a performance request corresponding to the request for data transfer according to a second protocol; and

if the request for data transfer does contain a request for acknowledgement of completion of the data transfer, setting a variable in memory to wait for an event corresponding to completion of the data transfer and sending an acknowledgement to the first protocol upon the occurrence of the event.

17. (Original) The method set forth in claim 16, comprising defining the first protocol as an internet small computer systems interface ("iSCSI") protocol.

18. (Original) The method set forth in claim 16, comprising defining the second protocol as a remote direct memory access ("RDMA") protocol.

19. (Original) The method set forth in claim 16, comprising defining the event to relate to a zero length remote direct memory access ("RDMA") read message completion.

20. (Original) The method set forth in claim 16, comprising defining the event to relate to a remote direct memory access ("RDMA") write message completion.

21. (Original) The method set forth in claim 16, comprising establishing an error recovery level by the first protocol to indicate the error recovery level in the request for acknowledgement of completion of the data transfer.

22. (Previously presented) An apparatus for acknowledging a data transfer, comprising:

means for receiving a request for a data transfer according to first protocol;

means for determining whether the request for the data transfer contains a request for acknowledgement of completion of the data transfer according to a second protocol;

means for sending a performance request corresponding to the request for data transfer according to a third protocol; and

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means for setting a variable in memory to wait for an event to correspond to the completion of the performance request and sending an acknowledgement according to the first protocol upon the occurrence of the event if the request for the data transfer does contain the request for acknowledgement of completion of the data transfer.

23. (Currently amended) A ~~tangible medium having a~~ computer storage medium ~~storing a program for acknowledging a data transfer, comprising:~~

code for performing a first protocol stored on the computer storage medium ~~the tangible medium~~ for generating a request for a data transfer; and  
code for performing a second protocol stored on the computer storage medium ~~machine-readable medium~~ for:

receiving the request for the data transfer from the first protocol;  
determining whether the request for the data transfer contains a request for acknowledgement of completion of the data transfer;  
sending a performance request corresponding to the request for data transfer to a third protocol; and  
setting a variable in memory to wait for an event to correspond to the completion of the performance request and sending an acknowledgement to the first protocol upon the occurrence of the event if the request for data transfer does contain a request for acknowledgement of completion of the data transfer.